

# Calculation of parameters of particles in a plasma jet and modeling of kinematic modes of spraying of wear resistant material

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## Abstract

© 2018 Institute of Physics Publishing. All rights reserved. In this article the calculations on the strength of the coupling halves of the CV joint by the finite element method in the system of APM FEM. This calculation method is a method of creating a mathematical model and method of investigation. The assigned technological parameters of plasma spraying, namely, the estimated capacity of the plasma generator is 50 kW, and reach air temperature at the output of 3000 K, and the corresponding enthalpy of  $3.8 \cdot 10^6$  J/kgK. Based on the analysis of the wear of the contact surfaces of the coupling halves, and also carried out strength calculations, was chosen as the material for plasma spraying - tungsten carbide. Developed mathematical model to determine the temperature of the powder particles and their velocities in a plasma jet. Based on the earlier dependence of the kinematic regimes of plasma spraying, the resulting system of equations for the kinematic modes that enable you to organize control of the kinematics of the deposition process details with the internal spherical surface.

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## Keywords

kinematic modes, mathematical modeling, plasma spraying, speed of the plasma jet, the temperature of the sprayed particles

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